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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/777,258

02/12/2004

David A. Torrey

AEC-0003

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7590

08/29/2006

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EXAMINER

STERRETT, JEFFREY L

ART UNIT

PAPER NUMBER

2838

DATE MAILED: 08/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/777,258

Applicant(s)

TORREY ET AL.

Examiner

Jeffrey L. Sterrett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4-16 and 18-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-16, and 18-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

1. The finality of the last office action is withdrawn in view of the newly discovered reference to Zhang et al (US 6,466,458). Rejections based on the newly cited reference follow below.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 1, 12, 15, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakano (US 5,134,307).

Nakano discloses an inverter system comprising an AC utility (T3 and T4); a DC source (12); a DC/DC converter (15, 45, and 70) coupled to the DC source synthesizing a time varying current (either the current through the isolation 45 or the DC from bridge rectifier 70 that has a ripple/harmonic components that requires filtering by LC filter LDC1/C4) from the DC source and comprising a full bridge MOSFET inverter (Q1-Q4 with inherent parasitic diodes shown and inherent parasitic capacitors not shown), an isolation circuit (45), and a rectifier (70); an output smoothing inductor (LDC1) coupled to the output of the DC/DC converter; and a full bridge inverter (77) coupled between the output inductor and the AC utility comprising switches (S1-S4).

4. Claims 1, 2, 4-16, and 18-21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Welches (US 6,404,655) in combination with Zhang et al (US 6,466,458).

Welches discloses an inverter system comprising an AC utility (60); a DC source (15); a DC/DC converter (30) coupled to the DC source synthesizing a time varying current (either the current through the transformer 25 or the DC from bridge

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rectifier 20 that has a ripple/harmonic components that requires filtering by LC filter L1/L2/C3/C4) from the DC source and comprising a full bridge MOSFET inverter (MOS1-MOS4 with inherent parasitic diodes and capacitors), an isolation transformer (25 with inherent parasitic inductances), and a rectifier (20); an output smoothing inductor (L1 and/or L2) coupled to the output of the DC/DC converter; and a full bridge inverter (40) coupled between the output inductor and the AC utility comprising switches (Q1-Q6) as recited by claims 1, 2, 4-16, and 18-21 except for utilizing a phase shifted bridge inverter as inverter (MOS1-MOS4). Zhang et al teaches phase shifted bridge inverters (figure 3) were an old and known expedient in the art at the time of the invention. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the inverter system of Welches by utilizing a phase shifted bridge inverter as inverter (MOS1-MOS4) in order to obtain zero voltage switching as taught by Zhang et al.

5. Applicant's arguments with respect to claims 1, 2, 4-16, and 18-21 have been considered but are moot in view of the new ground of rejection.

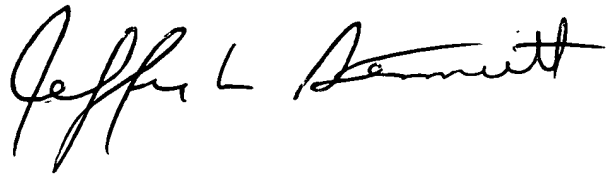
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey L. Sterrett whose telephone number is (571) 272-2085. The examiner can normally be reached on Monday-Thursday & 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl D. Easthom can be reached on (571) 272-1989. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeffrey L. Sterrett
Primary Examiner
Art Unit 2838

A handwritten signature in black ink, appearing to read "Jeffrey L. Sterrett", written in a cursive style.